CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 87-16

SITE CLEANUP REQUIREMENTS FOR:

FAIRCHILD SEMICONDUCTOR CORPORATION
SAN JOSE
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

1. Fairchild Semiconductor Corporation, hereinafter called the discharger, operated and owned a facility that manufactured electronic devices at 101 Bernal Road in the City of San Jose (Attachment 1). Construction of the facility began in 1975 and was completed in 1977 on land used for agricultural purposes. The facility was operated from April 1977 to October 1983. The discharger still owns the facility, but has ceased using the facility for manufacturing or for storing chemicals.

2. Chemicals handled, repackaged, and stored in bottles and drums on the site included 1,1,1-trichloroethane (TCA), xylene, acetone, isopropanol (IPA), and Freon. These chemicals were used in the wafer manufacturing process. The waste solvents were then collected and stored in two underground tanks (5,940 gallon and 550 gallon) or in 55 gallon drums for eventual disposal by a licensed chemical waste hauler.

3. The geology in the vicinity of the facility consists of alluvium extending below the ground surface to bedrock a depth of approximately 330 to 360 feet. This alluvial formation generally contains four silty clay layers which vary from a few feet to 60 feet in thickness. These aquifers are referred to as A, B, C and D aquifers with A being the most shallow. The general depth of these aquifers below ground surface are as follows: A occurs between 30 to 50 feet, B lies between 60 and 100 feet, C is between 150 and 190 feet and D is between 220 and 270 feet. In some locations, these individual aquifers merge or are absent. Also, these aquifer depths are very general; a major portion of the facility lies above the top of the A aquifer by only 10 to 15 feet.

4. On November 25, 1981, the discharger discovered 2900 ppb and 7600 ppb of 1,1,1-trichloroethane in groundwater from two monitoring wells installed during a search for residues from a cracked acid neutralization pipeline. On December 4, 1981, during its investigation concerning the source of the solvents, the discharger discovered through excavation of soil from around the 5,940-gallon waste organic solvent tank, that the tank had failed causing the release of organic solvents to soil and groundwater. On the same date, the discharger reported the waste organic solvent tank failure to Regional Board staff. On December 7, 1981, the discharger discovered 1,1,1-TCA concentrations above drinking water action levels in a drinking water supply well (Great Oaks Well No. 13) located about 1800 feet downgradient of the failed tank. Great Oaks Well No. 13 was taken

out of service as a drinking water supply well on December 7, 1981, and has not been used as a source of drinking water since that date. On December 10, 1981, the discharger installed a monitoring well immediately adjacent to the previous location of the removed waste solvent tank. Chemical analyses indicated that the soil in the well boring contained up to 86,000 ppb 1,1,1-TCA. Subsequent reports submitted by the discharger reported on May 11, 1982 indicate that approximately 58,400 gallons of a mixture of 1,1,1-TCA, xylene, Freon, IPA, and acetone were released from the failed tank. The discharger estimated that the release began occurring in May 1980 until the defective tank was removed and replaced on December 4, 1981.

5. Five municipal and 22 private water wells are known to exist as active or potentially active wells within a one mile radius up and down gradient around the site. Only four existing water wells were found to contain solvents from the failed tank release. These are the only four known water supply wells which have been contaminated by the release. The only public drinking water supply well impacted by the organic solvent waste tank failure was Great Oaks Well No. 13, which was taken out of service as of December 7, 1981. The remaining three water wells are described as being irrigation wells. After Great Oaks Well No. 13 was taken out of service, the average concentration of 1,1,1-TCA detected in the well was 5800 ppb in a concentration range of 4500 to 7000 ppb 1,1,1-TCA in thirty-three samples analyzed over a two month time period. None of the other solvents held in the failed waste organic solvent tank have been detected in Great Oaks Well No. 13. Currently, as a result of clean-up measures undertaken by the discharger, less than 100 ppb TCA is present in the three private irrigation wells. Similarly, less than 100 ppb TCA was present in Great Oaks Well No. 13 before it was sealed on October 9, 1986.

6. The discharger has installed more than 90 wells to aid in plume characterization, source control, and cleanup. Currently, 46 on-site and 60 off-site observation and recovery wells are monitored for synthetic organic chemicals. Monitoring results indicate that the pollutant plume is present in groundwater on and off-site and is currently under hydraulic control. The plume measures about 4,560 feet (0.86 miles) in length extending northwesterly from the former waste solvent tank location and is less than 214 feet in depth. At this time, the plume appears to be present in and is adequately defined in the A, B, and C aquifers. Low concentrations of TCA had been found in the two aquifer specific monitoring wells completed in the D aquifer. However, since September 1985, volatile organic chemicals have not been detected in these wells. The discharger may be required to perform additional plume characterization if potential vertical conduits are discovered in the area. As a result of an initial search for wells which could act as potential vertical conduits, the discharger located four wells, two of which were sealed by the discharger and the remaining two sealed at the suggestion of the discharger.

7. Activities to prevent further solvent migration from the source area included removal of the defective tank and of soil and groundwater containing solvents and installation of a slurry wall. On December 4, 1981, the discharger removed the defective 5,940-gallon tank from service and replaced it with an above ground 1000-gallon tank. On December 7, 1981, the 5,940-gallon tank was removed. In January 1982,

the discharger was allowed to operate Great Oaks Well No. 13 solely to intercept a portion of the plume and prevent additional plume migration. The discharger has removed 3,389 cubic yards of soil from 50 feet by 65 feet in plan and 52 feet deep in the area of the former waste tank. Additionally, along the entire perimeter of the facility's property boundary, the discharger has constructed a three percent soil-bentonite slurry wall which is three feet wide and 70 to 140 feet deep extending through both the A and B aquifers and is keyed a minimum of two feet into the BC aquitard. The slurry wall was completed on May 30, 1986.

8. Interim remedial measures to cleanup the plume include offsite and onsite groundwater extraction and an on-site "A" Aquifer Flushing Program. The flushing program operated from March 1984 to December 1984 and consisted of recovery/injection wells which injected clean water into surrounding subsoils to flush out solvents. The program was discontinued before the slurry wall installation due to lack of hydraulic control of solvent migration in the A aquifer which resulted from clean water injection. The discharger has installed and currently operates four tiers of a five tiered groundwater extraction well system composed of a total of 18 extraction wells located throughout the plume. Currently, 9 wells are extracting groundwater for cleanup of the solvent plume. Operation of the extraction wells has prevented further plume migration, reduced the size of the plume, and reduced solvent concentrations within the plume.

9. The extracted groundwater has been either collected in tanks and hauled to a disposal site or discharged before or after treatment to storm drains leading to Canoas Creek. The outfall concentrations ranged from 600 ppb TCA initially to 7 ppb TCA currently which is within limits provided by the discharger's NPDES permit. The discharger has submitted a proposal to study the effects of discharging synthetic organic chemicals to Canoas Creek on groundwaters which may be recharged by the creek.

10. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on July 21, 1982. The Basin Plan contains water quality objectives and beneficial uses for South San Francisco Bay and contiguous surface and groundwaters.

11. The existing and potential beneficial uses of the groundwater underlying and adjacent to the facility include:

    a. Industrial process water supply
    b. Industrial service water supply
    c. Municipal and domestic water supply
    d. Agricultural water supply

12. The Board adopted Waste Discharge Requirements in Order No. 86-62 on August 20, 1986 for the discharger's site cleanup. The intent of this Site Cleanup Requirement Order is to modify the tasks and submittal dates contained in Order No. 86-62.

13. The discharger has caused or permitted, and threatens to cause or permit waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance.

14. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.

15. The Board has notified the dischargers and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

16. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the discharger shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.

2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. SPECIFICATIONS

1. The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. The discharger shall conduct monitoring activities as needed to define the current local hydrogeologic conditions, and the lateral and vertical extent of soil and groundwater pollution. Should monitoring results show evidence of plume migration, additional plume characterization of pollutant extent may be required.

C. PROVISIONS

1. The discharger shall submit to the Board acceptable monitoring program reports containing results of work performed according to a program prescribed by the Board's Executive Officer.

2. The discharger shall comply with Prohibitions A.1., A.2., and A.3., and Specifications B.1. and B.2. above, in accordance with the following time schedule and tasks:

COMPLETION DATE/TASKS:

A. ONSITE:

COMPLETION DATE: April 30, 1987

TASKS:

a) **Completion of Onsite Pilot Study Construction** - Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks for implementation of an on site active cleanup pilot study acceptable to the Executive Officer.

B. ON SITE AND OFF SITE

COMPLETION DATE: September 1, 1987

TASKS:

a) **Plume Definition** - Submit a technical report acceptable to the Executive Officer documenting completion of the definition of the plume of groundwater pollution (i.e. Remedial Investigation). The discharger shall use CERCLA guidance for Remedial Investigation reports or equivalent as designated by the U.S. Environmental Protection Agency (EPA).

b) **Effectiveness of Onsite Active Interim Cleanup** - Submit a technical report acceptable to the Executive Officer which evaluates the effectiveness of the interim onsite active cleanup and pilot studies. Such an evaluation shall include, but need not be limited to, an estimation of the flow capture zones of the extraction wells, injection wells, establishment of the cones of depression by field measurements, and presentation of chemical monitoring data. This report shall also evaluate and document the removal and/or cleanup of polluted soils, if such removal and or cleanup was an element of the remedial measures.

c) **Offsite Interim Cleannup Effectiveness Evaluation** - Submit a technical report acceptable to the Executive Officer which evaluates the effectiveness of the interim offsite hydraulic containment and cleanup system. Such an evaluation shall include, but need not be limited to, an estimation of the flow capture zone of the extraction wells, establishment of the cones of depression by field measurements, and presentation of chemical monitoring data. This report shall also evaluate and document the removal and/or cleanup of polluted soils.

d) **Onsite and Offsite Final Measures Proposal** - Submit a technical report acceptable to the Executive Officer containing an on site and offsite feasibility study which evaluates alternative final remedial measures; the recommended measures necessary to achieve final cleanup objectives; and the tasks and time schedule necessary to implement the recommended final remedial measures.

3. The submittal of technical reports evaluating final remedial measures will include a projection of the cost, effectiveness, benefits, and impact on public health, welfare, and environment of each alternative measure. The remedial investigation and feasibility study described in Provision C.2.B. of this Order shall comply with the provisions of Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300), Section 25356.1 (c) of the California Health and Safety Code, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, 42 U.S.C. 9601-9675, as amended by the Superfund Amendments and Reauthorization Act of 1986, CERCLA guidance documents with reference to Remedial Investigation, Feasibility Studies, and Removal Actions, and the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California".

4. If the discharger is delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the discharger shall promptly notify the Executive Officer.

5. Technical reports on compliance with the Prohibitions, Specifications, and Provisions of this Order shall be submitted by the fourteenth of each month to the Board commencing March 1987 and covering the previous month. On a monthly basis thereafter, these reports shall consist of a report that, (1) summarizes work completed since submittal of the previous report, and work projected to be completed by the time of the next report, (2) identifies any obstacles of which the company is aware that may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles, and (3) includes, in the event of non-compliance with Provision C.2. or any other Specification or Provision of this Order, written notification which clarifies the reasons for non-compliance and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of non-compliance on achieving compliance with the remaining requirements of this Order.

6. On a quarterly basis, commencing with the March 1987 monthly report, which is due April 1987, the monthly reports shall include, but need not be limited to, updated water table and piezometric surface maps for all affected water bearing zones, and appropriately scaled and detailed base maps showing the location of all monitoring wells and extraction wells, and identifying adjacent facilities and structures. Cross-sectional geological maps describing the hydrogeological setting of the site shall be provided in the first quarterly status report for each calendar year that this Order is in effect. If five or more new soil borings are completed during any quarter, updated cross-sectional geological maps shall be provided in the quarterly report for that quarter.

7. All hydrogeological plans, specifications, reports, and documents shall be signed by or stamped with the seal of a registered geologist, engineering geologist or professional engineer.

8. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.

9. The discharger shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

10. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be provided to the following agencies:

    a. Santa Clara Valley Water District
    b. Santa Clara County Health Department
    c. City of San Jose
    d. State Department of Health Services/TSCD
    e. State Water Resources Control Board
    f. U. S. Environmental Protection Agency, Region IX

    The Executive Officer may additionally require copies of correspondence, reports and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order to be provided to a local repository for public use.

11. The discharger shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:

    a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.

    b. Access to copy any records required to be kept under the terms and conditions of this Order.

    c. Inspection of any monitoring equipment or methodology implemented in response to this Order.

    d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.

12. The discharger shall file a report on any changes in site occupancy and ownership associated with the facility described in this Order.

13. If any hazardous substance is discharged in or on any waters of the state, or discharged and deposited where it is, or probably will be discharged in or on any waters of the state, the discharger shall immediately report such discharge to this Regional Board, at (415) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-office hours. A written report shall be be filed with the Regional within

five (5) working days and shall contain information relative to: the nature of waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention and Containment Plan (SPCC) in effect, if any, estimated size of affected area, nature of effects, corrective measures that have been taken or planned, and a schedule of these activities, and persons notified.

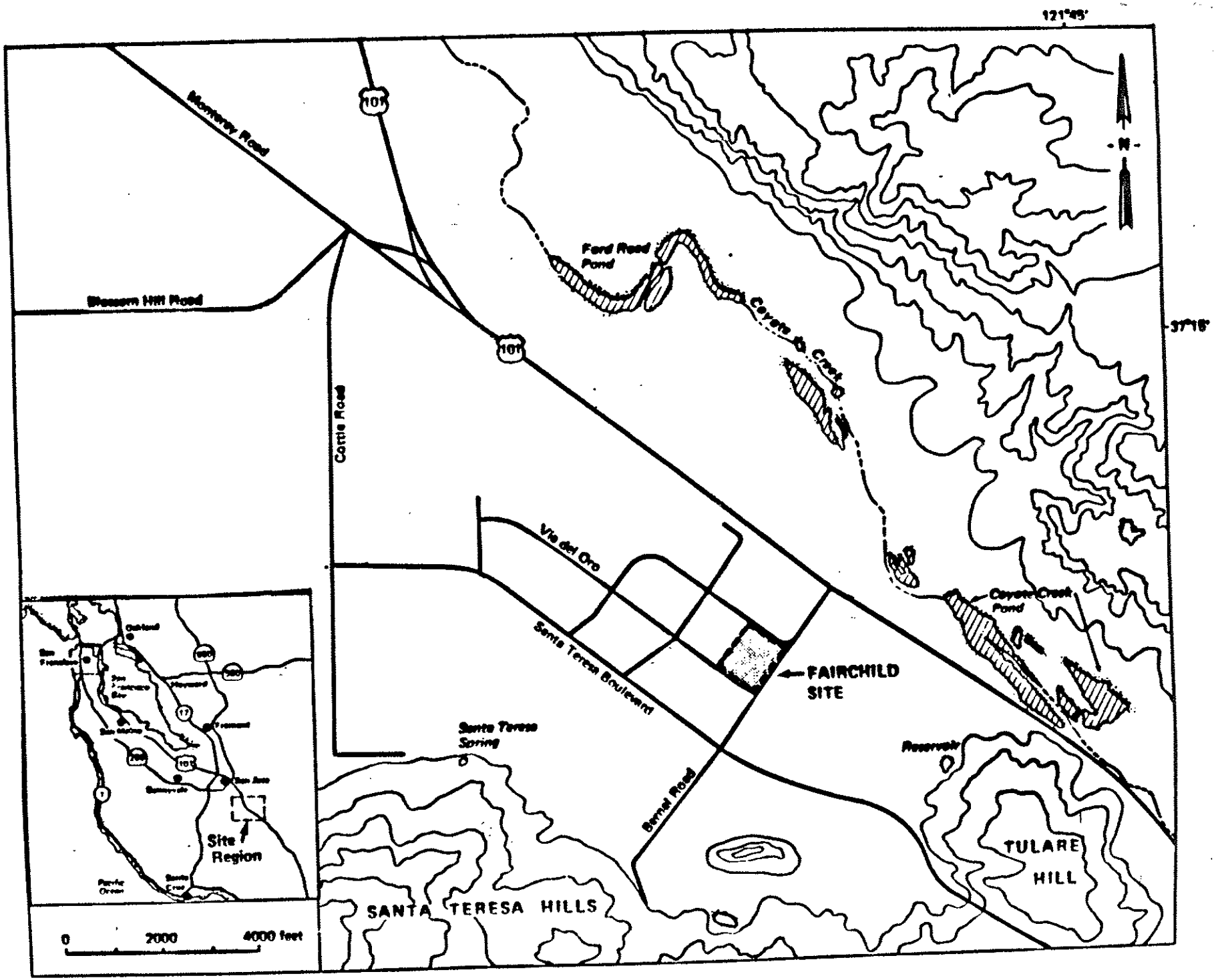
14. The Board will review this Order periodically and may revise the requirements when necessary.

15. This Site Cleanup Requirement Order does hereby rescind Order No. 86-62.

I, Roger B. James, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on March 18, 1987.

for Roger B. James
Executive Officer

Attachment: Site Map



Attachment 1